

A Phase I Archaeological Survey
of Two Proposed Borrow Areas on the Yano Range,
Fort Knox Military Reservation,
Bullitt County, Kentucky

by
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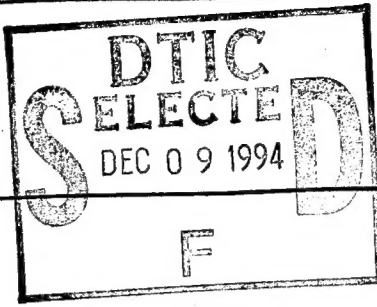
May 1994

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NTIS CRA&I	<input checked="checked" type="checkbox"/>
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Availability Codes	
Dist	Avail and/or Special
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Directorate of Public Works, Fort Knox, Kentucky 40121-5000

19941202 172

50272-107		1. REPORT NO.		2.		3. Recipient's Accession No.	
REPORT DOCUMENTATION PAGE						5. Report Date May 1994	
4. Title and Subtitle A Phase I Archaeological Survey of Two Proposed Borrow Areas on the Yano Range, Fort Knox Military Reservation, Bullitt County, Kentucky						6.	
7. Author(s) Stephen T. Mocas						8. Performing Organization Rept. No.	
9. Performing Organization Name and Address Directorate of Public Works ATTN: ATZK-PWE (ARCH) U.S. Army Armor Center and Fort Knox Fort Knox, KY 40121-5000						10. Project/Task/Work Unit No.	
						11. Contract(G) or Grant(G) No. (C) DACW65-93-D-0039 and (G) DABT23-93-C-0093	
12. Sponsoring Organization Name and Address Directorate of Public Works ATTN: ATZK-PWE (ARCH) U.S. Army Armor Center and Fort Knox Fort Knox, KY 40121-5000						13. Type of Report & Period Covered Final (March-May 1994)	
15. Supplementary Notes		Employees in Cultural Resource Management Branch of Directorate of Public Works are outside contractors working for either J.M. Waller Associates, Inc., 9607 Oakington Dr., Fairfax Station, VA 22039 (contract DACW65-93-D-0039) or Program of Archaeology, University of Louisville, Louisville, KY 40292 (contract DABT23-93-C-0093).					
16. Abstract (Limit 200 words)		<p>In March 1994 the Fort Knox Staff Archeologist and Assistant Staff Archeologist conducted a Phase I archaeological survey of two proposed borrow areas to be used for berm repair on the Yano Range on the Fort Knox Military Reservation, Bullitt County, Kentucky. Site 15Bu524 has Early Archaic, Late Archaic/Early Woodland, and Middle Woodland components. It is not eligible for the National Register and no additional archeological work is recommended for it. Site 15Bu525 is a lithic scatter of indeterminate prehistoric cultural affiliation. Site 15Bu526 has Early Archaic and Late Archaic components. Site 15Bu527 has a Late Archaic/Early Woodland component. Portions of the sites have already been destroyed, but sizeable areas of 15Bu525-15Bu527 remain intact. 15Bu525-15Bu527 are considered potentially eligible for the National Register. If the installation proposes to expand the borrow pits into 15Bu525-15Bu527, these sites should be tested prior to earthmoving activities.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>This document has been approved for public release and sale; its distribution is unlimited.</p> </div>					
17. Document Analysis		<p>a. Descriptors</p> <p>b. Identifiers/Open-Ended Terms</p> <p>Archaeology Bullitt County, Kentucky Fort Knox, Kentucky</p> <p>Crooked Creek, Kentucky Rolling Fork River, Kentucky</p> <p>c. COSATI Field/Group</p>					
18. Availability Statement Release Unlimited		19. Security Class (This Report) Unclassified		21. No. of Pages 40 (iv + 36)		22. Price	
		20. Security Class (This Page) Unclassified					

DTIC QUALITY INSPECTED 5

ABSTRACT

In March 1994 the Fort Knox Staff Archeologist and Assistant Staff Archeologist conducted a Phase I archaeological survey of two proposed borrow areas to be used for berm repair on the Yano Range on the Fort Knox Military Reservation, Bullitt County, Kentucky. The survey resulted in the recording of four prehistoric sites (15Bu524 through 15Bu527).

Site 15Bu524 has Early Archaic, Late Archaic/Early Woodland, and Middle Woodland components. It is not eligible for the National Register and no additional archeological work is recommended for it.

Site 15Bu525 is a lithic scatter of indeterminate prehistoric cultural affiliation. Site 15Bu526 has Early Archaic and Late Archaic components. Site 15Bu527 has a Late Archaic/Early Woodland component. Portions of the sites have already been destroyed by the previous range construction and improvements, and road building operations, but sizeable areas of 15Bu525, 15Bu526 and 15Bu527 remain intact. Sites 15Bu525 through 15Bu527 are considered potentially eligible for the National Register. These three sites yielded moderate amounts of debitage under poor visibility conditions, with concentrations of materials that might reflect subsurface features, and the shovel probes indicated the plowzone deposits were thick enough to potentially preserve subsurface features, if any were present.

It is recommended that the installation be permitted to borrow in the area east of the road, and in the area west of the road outside the boundaries of sites 15Bu525, 15Bu526, and 15Bu527. If the installation proposes to expand the borrow pits into the 15Bu525, 15Bu526, and 15Bu527, these sites should be tested prior to earthmoving activities.

MANAGEMENT SUMMARY

In accordance with Executive Order 11593 and other applicable federal laws and regulations, a Phase I archaeological study was conducted of proposed borrow areas for the Yano Range on the Fort Knox Military Reservation, Bullitt County, Kentucky. Field inspection resulted in the recording of 15Bu524 through 15Bu527. A substantial portion of 15Bu524 had been destroyed by the previous range construction and road building. It is considered not eligible for the National Register, and no further archaeological investigation is recommended for 15Bu524. Sites 15Bu525, 15Bu526, and 15Bu527 have been partially disturbed by previous earthmoving activities, but the remaining portions are considered potentially eligible for the National Register. It is recommended that the installation be permitted to borrow in the proposed borrow area east of Primary Target Service Road #1 and in the proposed borrow area west of the road but outside the boundaries of 15Bu525, 15Bu526, and 15Bu527. If the installation proposes to expand the borrow pits into 15Bu525, 15Bu526, and 15Bu527, these sites should be tested prior to earthmoving activities.

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I. INTRODUCTION

In March 1994, the Fort Knox Staff Archeologist and Assistant Staff Archeologist performed a Phase I archaeological survey of proposed borrow areas for the Yano Range berm repair in Hunting Area 111 at Fort Knox, Bullitt County, Kentucky (Figure 1). The proposed borrow areas comprise a total of approximately 4.4 ha (10.9 acres), of which 1.25 ha are east of Primary Target Service Road #1 and approximately 3.24 ha are to the west. The project area is bounded to the west by a drainage, to south by the slope to the Rolling Fork River, and to the east and north by a drainage ditch. The portion of the project area to the east of the road had been graded and significantly altered by construction of the road and drainage ditches. The area directly west of the road had been altered by road construction, but the majority of the area had intact plowzone deposits.

During July and August, 1993, the Fort Knox Staff Archeologist obtained all the documents necessary to perform Phase I literature searches for the installation. Copies of all of the state site forms for sites on the Fort Knox installation were acquired from the Office of State Archaeology (OSA), University of Kentucky, Lexington, and all reports of previous investigations on the installation or immediately adjacent to the installation from gathered from various sources. She also updated the site files by comparing the Fort Knox cultural resources quadrangle maps against the quadrangles on file at the OSA. All documents necessary to perform Phase I literature searches for the installation are present at the Cultural Resource Management Branch of the Directorate of Public Works (DPW), Fort Knox, therefore, no file check was made with the OSA and the Kentucky Heritage Council specifically for this project.

The project area is located in the Plain section of the Pennyryle cultural landscape. The proposed borrow areas are on the first terrace of the floodplain of the Rolling Fork River. This area is at the eastern edge of the Mississippian Plateau physiographic region. Elevations of the project area range from approximately 440-450 feet. Soils are classified as Belknap-Karnak soil association (U.S.D.A. 197592: General Soil Map). The project area is on a terrace dissected by many intermittent drainages that flow into the Rolling Fork, which is located approximately 150 m south of the project area. Crooked Creek flows into the Rolling Fork River approximately 300 m southeast of the project area.

The archaeological survey was conducted in preparation for the removal of borrow materials for the repair of the target berms on the Yano Range. The archaeological survey and literature review were required to comply with the National Environmental Protection Act, or NEPA, (Public Law 91-190), the Historic Preservation Act of 1966, as amended

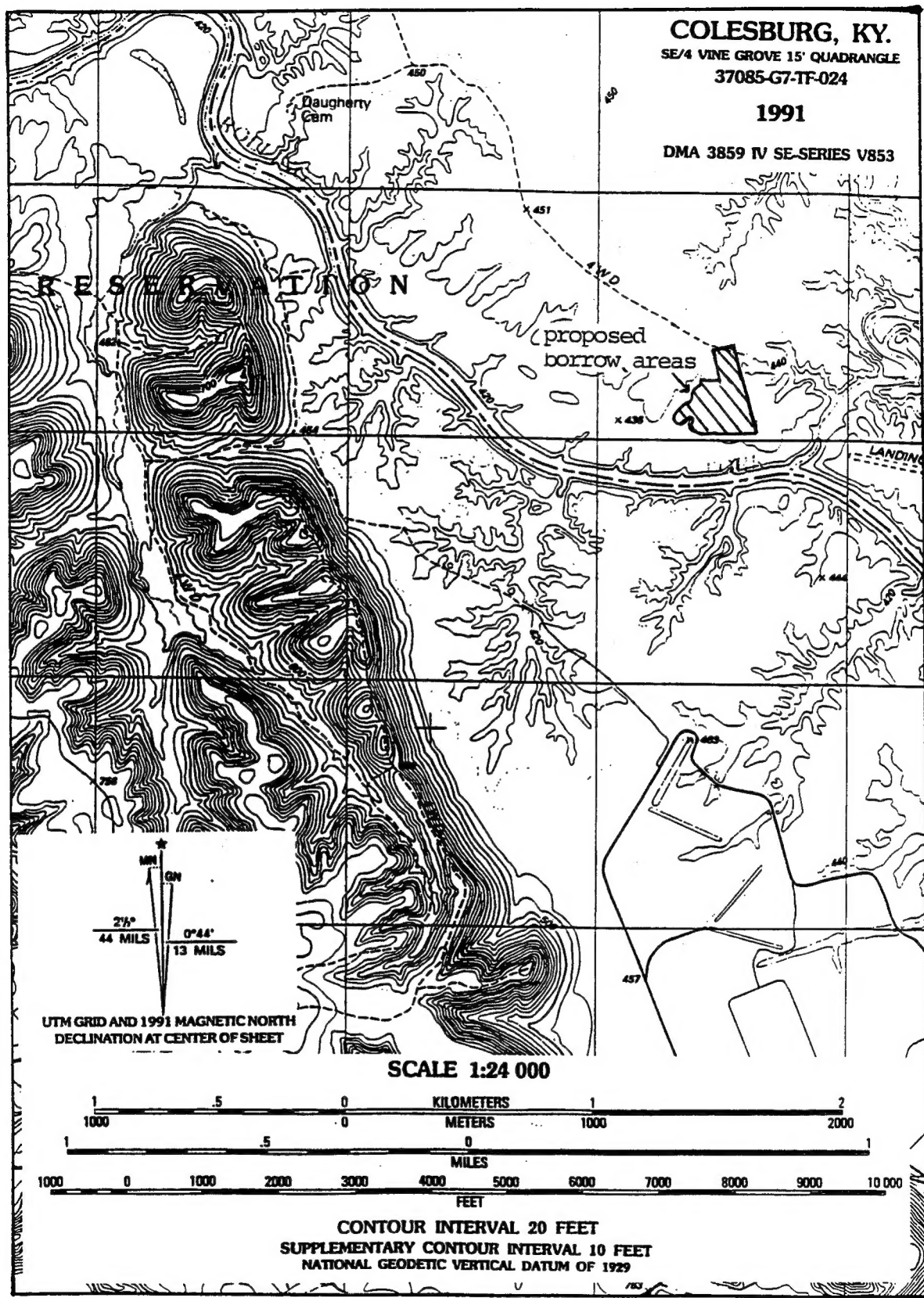


Figure 1. Location of Proposed Borrow Areas.

(Public Law 89-665), the Archaeological Resources Protection Act of 1979 (Public Law 96-95), Presidential Executive Order 11593, and Army Regulation 420-40.

The project area was surveyed on March 4 and 11, 1994. A total of 12 person hours were spent in the survey of the proposed borrow areas. The artifacts collected in this survey and the documentation of this project will be curated at the University of Louisville Program of Archaeology, on a "permanent loan" basis, under contract number DABT 23-93-C-0093, for curatorial and technical support (copy of contract on file, DPW, Fort Knox, Kentucky). Duplicate copies of the documentation will be stored at the Directorate of Public Works, U.S. Army Armor Center and Fort Knox, Fort Knox, Kentucky.

II. ENVIRONMENTAL SETTING

O'Malley et al. (1980) presented a detailed description of the setting and environmental background of the Fort Knox base as a whole. This section will concentrate on the characteristics of the project area.

The project area lies at the eastern edge of the Mississippian Plateau physiographic region of Kentucky (McGrain and Currens 1978:35). The terrain is characterized by a broad floodplain on both sides of the Rolling Fork River, with the Mississippian Plateau rising to the west and the Knobs rising to the east. The elevation in the project area is approximately 440-450 feet.

Soils in the project area are classified as McGary-Markland-Nolin soil association (U.S.D.A. 1992: General Soil Map), which are described as, "nearly level to steep, deep, somewhat poorly drained to well drained soils that have a clayey subsoil; on stream terraces (Whitaker and Waters 1986:50-51). Soil in the borrow areas is McGary silt loam, and occasional floods and a high water table limit the utility of the soil for cultivation (Whitaker and Waters 1986:51).

Numerous small drainages descend from the terrace into the Rolling Fork River, and 15Bu525, 15Bu526, and 15Bu527 each were bordered by small drainages to the east and west. Site 15Bu524 was west of a tributary to Crooked Creek, but not bordered by it. The exact distance was not measured because of the possibility of explosives between the site and the creek. The Rolling Fork is 120-150 m south of the sites.

At the time of survey, the surface of the project area was covered sparsely with flattened grass, which had recently burned in many areas. Numerous shell craters and

shallow holes from removal of ordnance added significantly to the visibility. Most of the project area east of the road had been previously disturbed by earthmoving activities, and the area directly adjacent to the west side of the road had been graded.

III. PREVIOUS RESEARCH

A number of cultural resource management (CRM) projects have been conducted on the Fort Knox military reservation. Numerous projects also have been conducted in the portions of Bullitt, Meade, and Hardin Counties outside the military reservation, according to the state archaeological bibliography and updates. O'Malley et al. (1980) provide an in-depth discussion of research in Bullitt, Hardin, and Meade counties through 1979, and Schenian (1991) and Schenian and Mocas (1992) provide a summary of the research which has taken place since the O'Malley et al. (1980) study was completed. This section will focus on the projects which have been conducted on the military reservation and within the vicinity of the current project area.

There are 112 Hunting Areas on the Fort Knox installation, plus an approximately 10,000 acre cantonment area and a small amount of acreage which lies outside the cantonment area or any hunting area. O'Malley et al. (1980) surveyed approximately one-quarter of each of the 96 hunting areas which did not contain grenade ranges. O'Malley et al. (1980) recorded 415 sites (15Bu295 through 15Bu410, 15Hd109 through 15Hd294, and 15Md103 through 15Md242). Some of these sites were recorded outside the official survey areas, and were discovered while gaining access to the selected survey areas from the closest access road. Some of the sites are isolated finds. O'Malley et al. (1980) did not evaluate the National Register status of the sites inspected in a manner which meets the current standards, although opinions are offered on many of the site forms and in an appendix of the report of investigations. The purpose of the O'Malley et al. (1980) study was to provide a preliminary inventory of portions of the installation and to develop a database for the predictive modeling of site locations on the installation, and not to evaluate sites for a task-specific construction project.

Holmberg (1991) prepared an archival study on the four mill sites (15Md164, 15Md176, 15Md185, and Grahamton) recorded by O'Malley et al. (1980) in the Meade county section of the base. Holmberg's (1991) study includes an appendix (Ball 1991a) delimiting a scope of services for the testing of the mill sites. This testing is scheduled to be performed in 1994 and 1995 through a Legacy grant.

A number of projects have been conducted in conjunction with proposed timber harvests. Bush et al. (1988) revisited 15Bu319 and recorded sites 15Hd438 through 15Hd446 and 15Bu485 through 15Bu491 in their survey of timber areas in Hunting Areas 41, 42, and 52. Myers (1990) surveyed 287 acres in Hunting Area 95, recording 15Bu495 through 15Bu502, and describing modern house and garbage dump sites. Mueller (1991) surveyed 270 acres in Hunting Area 1, revisiting 15Md11, 15Md152, and 15Md159, and recording 15Md322 through 15Md325, two historic cemeteries, five prehistoric isolated finds, and three modern structures. Schenian and Mocas (1992) surveyed 600 acres and attempted to relocate and flag previously recorded sites in an additional 300 acres. Their project areas consisted of 14 timber parcels located in Hunting Areas 13, 74, 76, 77, 78, 81 through 84, and 88 through 90. This survey resulted in the recording of sites 15Hd462, 15Hd463, 15Hd464, 15Md326, and one isolated find, and the revisiting of 15Hd140. Attempts were made to relocate 15Hd18, 15Hd113, and 15Hd139, but were unsuccessful. Ruple (1992a) revisited sites 15Md152, 15Md153, and 15Md322 in Hunting Area 1. Ruple (1992b) revisited sites 15Hd184, 15Hd186, and 15Hd249, and made an unsuccessful attempt to relocate 15Hd248, in order to flag avoidance boundaries around the sites in Hunting Area 90 in preparation for logging activities in conjunction with the clearing of the Highway 313 easement. Ruple (1993a) surveyed all 813 acres comprising Hunting Area 4 in preparation for timber harvests in scattered parcels within the Hunting Area.

The improvement of facilities on the Fort Knox installation has resulted in several CRM studies. Sorensen and Ison (1979) surveyed a proposed telephone building expansion site and access road in the cantonment area, recording no sites. Sussenbach (1990) surveyed three weather radar installation sites, in Hunting Area 23, discovering one prehistoric isolated find. Ruple (1993b) surveyed approximately 10 acres in the cantonment area for a shoreline maintenance project, encountering no sites. Mocas (1993) reported on the examination of approximately 165 acres in and around a proposed landfill and borrow area, which located no sites in the highly disturbed area. Mocas (1994a) surveyed a 69.7 acre area around a proposed sports complex in the cantonment, encountering no archaeological sites.

The development, expansion, or improvement of training areas has resulted in a number of CRM studies. Driskell and O'Malley (1979) surveyed the Wilcox Gunnery Range, recording sites 15Bu393 through 15Bu397. Schenian (1991) surveyed 116 acres in portions of Hunting Areas 17, 30, and 41, in conjunction with the Fort Dix realignment, re-examining 15Bu303, and recording 15Bu492, 15Hd459, and two prehistoric isolated finds. Hemberger (1991) also surveyed approximately 405 acres in seven construction sites in Hunting Areas 17, 24, 31, 32, 34, and 54, in conjunction with the Fort Dix realignment. This study resulted in the recording

of 15Hd461 and 15Bu504, the revisiting of 15Bu299 and 15Bu385, and the unsuccessful attempt to relocate previously recorded site 15Hd274. Hemberger (1991) surveyed a total of 126 acres in four proposed construction areas in the Yano Tank Range, in Hunting Area 93, recording 15Hd460, revisiting 15Hd178, 15Hd182, and 15Hd282, and unsuccessfully attempting to relocate previously recorded site 15Hd283. Hemberger (1992) surveyed a 7.5 acre borrow area in Hunting Area 24, proposed to be used for the consolidation and improvement of two training ranges, and encountered no sites.

In conjunction with land sales, Ball (1987) surveyed approximately 196 acres in the Bullitt County portion of Fort Knox, recording sites 15Bu479 through 15Bu481 and describing one post-1950, or modern, house foundation. Ball (1991b) also surveyed a 19 acre tract near Radcliff prior to disposal of the tract, recording two historic/modern trash dumps which were not assigned state site numbers. Hale (1981) surveyed the Otter Creek Park, recording 15Md243 through 15Md303. Portions of Otter Creek Park, now owned by the City of Louisville, were once part of the Fort Knox military installation, but were disposed of in the 1970's.

Road construction and improvements have resulted in a number of CRM projects on the military reservation. McGraw (1976) surveyed the proposed U.S. 60 bridge and approaches near Otter Creek park, encountering no sites in a 2.35 mile long corridor which passes through Hunting Areas 7 through 9 and 11 and 12. Fiegal (1982) surveyed the Radcliff Industrial Park access road, including land in Hunting Area 15 as well as off the installation. He recorded 15Hd403 and 15Hd404 off the installation, and revisited 15Hd215 and 15Hd272 on the installation. Webb and Brockington (1986) surveyed the 4.75 mile long Kentucky Highway 1638 realignment corridor, which included portions of Hunting Areas 5 and 7 through 10. They revisited sites 15Md176, and 15Md182 through 15Md185, and recorded 15Md306, 15Md307, and 15Md309. Sites 15Md176, 15Md182, 15Md183, and 15Md307 were all parts of the former town of Garnettsville. The latter three sites were tested (Wheaton 1982), but 15Md176 was not tested because it fell outside the 1638 realignment easement. DiBlasi (1986) surveyed 14 alternative alignments of the approximately 20 km (12.4 miles) long Kentucky Highway 313 corridor, which includes portions of Hunting Areas 80 through 83 and 90, as well as land outside the installation. A total of 27 sites (15Hd406-15Hd430 outside the installation, and 15Hd135, 15Hd184, 15Hd186, 15Hd248, 15Hd249, 15Hd253, 15Hd431, and 15Hd432 on the installation), some previously recorded, were located in the survey corridor. Hixon (1992) tested 15Hd423 and 15Hd426, and archaeologists from Wilbur Smith Associates tested six sites on the installation, including 15Hd249 and 15Hd253 (Fenton 1993: personal communication to Schenian). A recent survey of proposed borrow pits for the Cedar Creek-Yano Road improvements (Mocas

1994b) resulted in the recording of 15Hd489 and 15Hd490, the revisiting of 15Hd120 and 15Hd121, and the unsuccessful attempt to relocate 15Hd246. Schenian and Mocas (1994a) located prehistoric site 15Hd488 during a survey of 1.7 acres of proposed borrow area for the Cedar Creek Airstrip.

In addition to the CRM projects, several sites have been recorded on the military reservation in non-CRM contexts. Funkhouser and Webb (1932) published a catalog of archaeological sites in the state, with the information gained primarily through correspondence with amateur archaeologists, collectors, and local historians, and included the description of two sites now on the military reservation. These are 15Md10, a mound group on Indian Hill, and 15Md11, a mound near the mouth of Otter Creek (Funkhouser and Webb 1932:281). Lee Hanson recorded 15Hd17 and 15Hd18, while attending ROTC training camp at Fort Knox in 1961 (Hanson 1961a, 1961b; Dr. R. Berle Clay 1991: personal communication). The wife of a soldier stationed at Fort Knox partially excavated 15Hd273, a mound in Hunting Area 6, in 1955 (Anonymous 1955).

Of greatest relevance to the current survey are the O'Malley et al. (1980) survey of a large tract of the Rolling Fork floodplain in Hunting Area 93 and a portion of Hays Flats in Hunting Area 112 and the Hemberger (1991) survey and resurvey of the north end of the Yano Range. Together these surveys provide information about the type and distribution of sites in the floodplain of the Rolling Fork and the adjacent Hays Flats. Of the sites recorded in the aforementioned studies, the sites nearest to the current project area are 1.5-2.0 km away. No known archaeological sites or standing structures listed on or eligible for listing on the National Register of Historic Places are located in or immediately adjacent to the current project area.

IV. SURVEY PREDICTIONS

Based on previous archaeological research in the area, the history of settlement, and the environmental setting of the project area, the following results were expected:

- 1) The Yano Range has been in use for approximately 40 years, and was subject to extensive disturbance during land clearing, construction of the original range, and the range improvements in 1992. It was expected that much of the project area would be heavily disturbed.
- 2) Knolls, ridges, and terraces dissected by small drainages and located above major streams, situations similar to that of the current project area, are extremely high potential areas for the

location of prehistoric sites. The project area may be too prone to flooding to be a likely locale for a historic site.

- 3) Surface alteration in the project vicinity has been extensive due to historic agricultural practices (e.g., bedfurrowing and diversion terrace construction) and due to the construction of the service road within the project area, therefore, it was expected that cultural deposits would be at least partially disturbed.

V. FIELD METHODS

Most of the project area had been used as an artillery impact area and some portions had been scraped for road construction. Flattened and burned grasses covered much of the surface, but impact craters, overturned earth from dud removal, and occasional bare spots allowed fair visibility in most of the project area. Along the sides of the road the surface had been graded to provide drainage, and this area had 100 percent visibility and was the source of most of the cultural material recovered from 15Bu524. The slope toward the Rolling Fork was slightly eroded and deflated and provided good visibility, and much of the cultural material from 15Bu526 and 15Bu527 was recovered from this area.

The majority of the project area was systematically walked in transects at 5 m intervals because sites covered most of the area. Outside of the sites, it was walked at 10 m intervals. Visibility east of the service road was poorer and the area had been graded more heavily, therefore shovel probes were used more frequently. If the ground surface was obscured by vegetation for greater than 10 m within a transect, then a shovel probe was excavated and the fill was trowel sorted. Shovel probes were excavated throughout the project area to delimit the site, examine the depositional characteristics, and ascertain the extent and method of disturbance. Each shovel probe was approximately 30 cm in diameter at ground surface and excavated to a depth of at least 30 cm, or until a sterile subsoil or bedrock were encountered. The walls of each shovel probe were scraped and inspected for evidence of archaeological deposits. Shovel probing in the west borrow area was limited to several probes on each site because of a high water table and wet field conditions, and the density of incendiary ordnance observed on 15Bu525.

Upon discovery of archaeological materials, the ground surface around the find was walked in transects spaced at 5 m intervals, until no additional materials were recovered for a distance of 20 m within a transect. The fill from shovel probes in the vicinity of potential sites was

screened through one-quarter inch hardware cloth prior to backfilling of the tests. Figures C-1 through C-4 in Appendix C depict the locations and plans of the sites encountered in the project area, and Figure C-5 illustrates representative soil profiles of the shovel probes.

VI. MATERIALS RECOVERED

The following paragraphs summarize the artifact typologies used in the sorting and analysis of the artifacts. The total number of artifacts collected from each site is broken down by prehistoric artifact types (Table 1).

Ceramics

Ceramics are fired clay objects, usually vessels, often with rock, clay, or other inclusions added to facilitate firing, or increase strength, and workability of the clay. A plain-surfaced, siltstone-tempered sherd of Early Woodland or early Middle Woodland cultural affiliation was recovered from 15Bu527.

Projectile Point

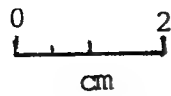
A projectile point is a bifacially worked chipped stone tool which is generally assumed to have been hafted for use as a hunting implement, such as a spear head or arrowhead, but may have had an alternative or additional use as a cutting implement. An Early Archaic Kirk Corner Notched variant (7500-6900 B.C. [Justice 1987:71]); an Early Woodland Dickson Contracting Stem point (500-100 B.C. [Justice 1987: 190-191]); a Bakers Creek (Middle Woodland A.D. 150-600 [Justice 1987:211]) or Saratoga Expanding Stem (Late Archaic/Early Woodland 2000 B.C.-? [Justice 1987:158]) point; a Middle to Late Woodland Lowe Flared Base point (A.D. 200-600 [Justice 1987:212-213]) (Figure 2) and a distal point fragment were recovered from 15Bu524. A Lost Lake point, an Early Archaic type (8000-6000 B.C. [Justice 1987:58]) and a Benton Stemmed (Late Archaic 3500-2000 B.C. [Justice 1987: 111-112]) or Saratoga Broad Bladed point (Late Archaic/Early Woodland 2000 B.C.-? Justice 1987:158]) (Figure 3) were recovered from 15Bu526. 15Bu527 yielded a Late Archaic Karnak Stemmed point (3700-3000 B.C. [Justice 1987: 134]) (Figure 4).

Biface

A biface is a chipped stone tool that has had flakes removed from two opposing surfaces along one or more edges. These tools may function as quarry blanks, preforms for more

Table 1. Inventory of Prehistoric Artifacts.

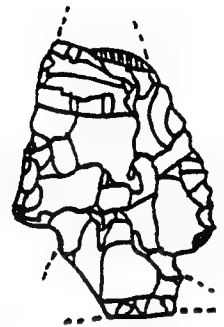
	<u>15Bu524</u>	<u>15Bu525</u>	<u>15Bu526</u>	<u>15Bu527</u>	<u>Total</u>
Ceramics	0	0	0	1	1
Projectile point	5	0	2	1	8
Biface	1	0	1	2	4
Utilized chert debitage					
Tertiary flake	0	0	1	1	2
Unutilized chert debitage					
Primary flake	1	0	3	5	9
Secondary flake	0	2	3	30	35
Tertiary flake	2	16	12	61	91
Chert shatter	3	10	10	49	72
Tested chert cobble	1	0	1	0	2
Hammerstone	0	0	0	3	3
Groundstone tool	0	0	1	0	1
TOTAL PREHISTORIC ARTIFACTS	13	28	34	153	228



possible Baker's Creek
point base



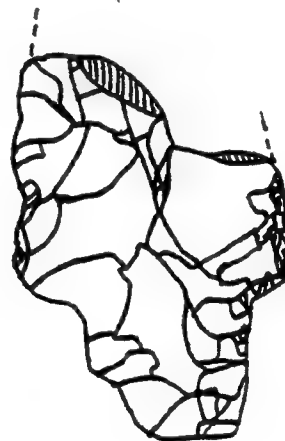
preform or knife



possible Kirk
point variant

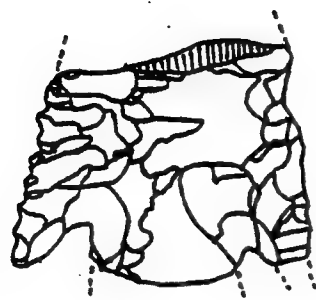


Lowe Flared Base point

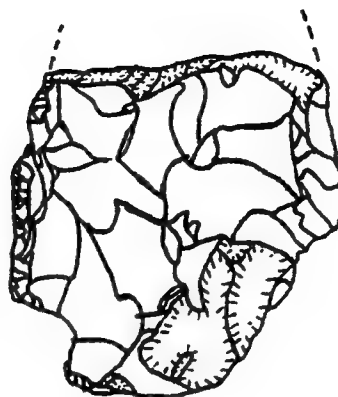


Dickson Contracting Stem or
Adena Stemmed point

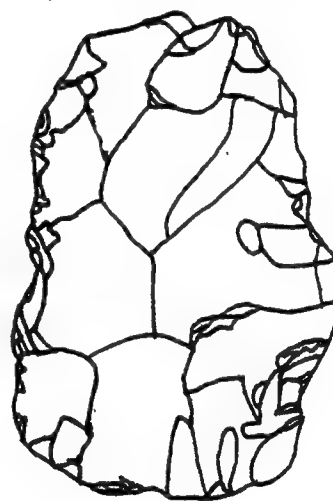
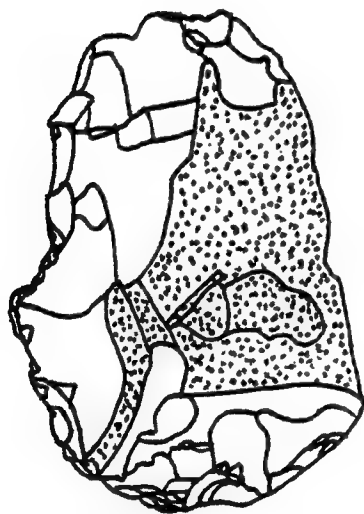
Figure 2. Artifacts from 15Bu524.



Lost Lake point



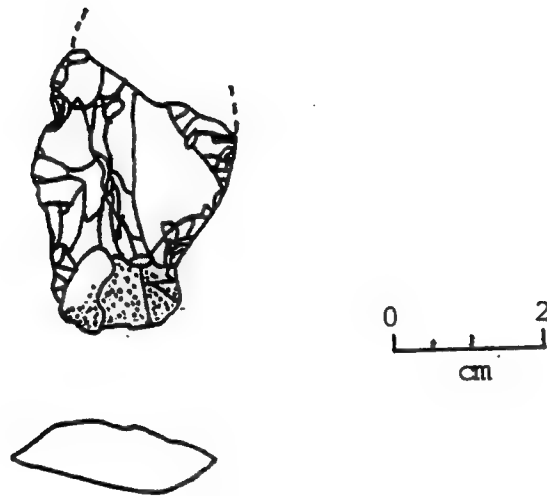
possible Benton or Saratoga point



biface



Figure 3. Artifacts from 15Bu526.



Karnak Stemmed point

Figure 4. Artifact from 15Bu527.

refined tools, knives, or other tools. A preform or knife was recovered from 15Bu524 (Figure 2), a biface was found on 15Bu526 (Figure 3), and a large, crude biface and a biface or projectile point fragment were recovered from 15Bu527.

Chert Debitage

Chert debitage is the material created as a by-product in the manufacture of more formally defined chipped stone tools. Chert debitage may be further divided into the categories of flakes, blocky chert pieces, and chert shatter. It may also be classified by stage of manufacture and by evidence for use as an informal, or expedient, tool. The following criteria have been applied to sort the chert debitage collected in this study:

- 1) Flakes are defined by the presence of a striking platform and bulb of percussion. Concentric rings or ripple marks on the ventral surface, and feather terminations may also be present. Flakes are classified as primary flakes if 90 percent or more of the dorsal surface (the side opposite the bulb of percussion) is covered by cortex or rind; as secondary flakes if one to 90 percent of the dorsal surface is covered by cortex; and as tertiary flakes if no cortex is present on the dorsal surface. A piece of chert debitage is classified as unutilized if it exhibits no evidence of the removal of small flakes through use.
- 2) A chert piece is classified as shatter if it is a flat, generally small, piece exhibiting some flake-like characteristics, but is insufficiently complete to classify the piece as a primary, secondary or tertiary flake.
- 3) A microflake is a complete flake that is less than 5 mm in length, generally associated with fine retouch or resharpening of tools.
- 4) A piece of chert debitage is classified as utilized if at least three contiguous small flakes have been removed from one edge by use rather than retouch.

Tested Chert Cobble

A tested cobble is a piece of chert raw material that was flaked to ascertain its suitability for use in manufacture of tools. A tested cobble was found at 15Bu524, and a tested cobble was recovered from 15Bu526.

Hammerstone

A cobble of chert, sandstone, igneous, or metamorphic rock used for percussion, to flake chert, or to crush nuts, bone, or other materials. It is characterized by one or more battered areas. Three hammerstones were recovered from 15Bu527.

Groundstone

Groundstone tools, generally, are made from fine-grained sandstone, siltstone, metamorphic or igneous rock. Frequently, these are waterworn cobbles or tabular pieces that are adapted for use as hammerstones, grinding stones, or anvil stones. A pitted stone, referred to as a nutting-stone because of the implied use as an anvil for cracking nuts, was recovered from 15Bu526.

VII. CULTURAL RESOURCES

The UTM coordinates of the cultural resources inspected are in Appendix B. The site locations are shown in Figure C-1, site plans are Figures C-2 through C-4, and representative soil profiles of the shovel probes are Figure C-5, in Appendix C.

15Bu524

Site 15Bu524 is multicomponent site with Early Archaic, Early Woodland, and Middle to Late Woodland components. The site is located at an elevation of 450 feet on a slight rise on a terrace 150 m north of the Rolling Fork River. A tributary of Crooked Creek is to the northeast, and the creek flows into the Rolling Fork River about 150 m to the south. The soil is McGary silt loam. The surface is occasionally flooded and the water table is high, which makes the soil poorly suited for cultivation and the locale a poor one for long term habitation. A raised roadbed has been built along the west edge of the site, most of the site surface has been graded, and the periphery of the site, except at the south end, has been sloped downward to provide drainage. The site is approximately 250 m (north-south) by 50 m in size.

A Kirk Corner Notched variant projectile point, a Dickson Contracting Stem point, a Bakers Creek or Saratoga point, and a Lowe Flared Base point, a preform or knife, and a tested cobble of chert were recovered from the site. All of the tool fragments were found on the drainage slope, and only a few of the 13 flakes were found in the interior of the site, probably because of poorer visibility caused by the flattened grass and standing water. Fire-cracked rock

was scattered across the surface in the center of the site, especially around the drainage ditch that had been cut across the middle of the site. Shovel probes located only small, isolated areas of topsoil. Most of the surface had been scraped below topsoil, but not deeply into the subsoil. No subplowzone midden was encountered.

Site 15Bu524 is considered not eligible for the National Register because it has been graded for fill for the service road and only small, isolated areas of plowzone deposits remain. No additional archaeological work is recommended for the site. It is further recommended that the area be made available for use as borrow fill for range improvements.

15Bu525

Site 15Bu525 is a lithic scatter of indeterminate cultural-temporal affiliation located at an elevation of 450 feet on a slight rise on a terrace 150 m north of the Rolling Fork River. A tributary of the Rolling Fork River is on the east side of the site, and a small drainage is southwest of the site. The soil is McGary silt loam. The surface is occasionally flooded and the water table is high, which makes the soil poorly suited for cultivation and the locale a poor one for long term habitation. The northern and western periphery of the site has been sloped downward to provide drainage. The site is approximately 90 m (north-south) by 60 m, and a moderate amount of chippage (28 pieces) was scattered across the surface.

Portions of the site have been disturbed by impact craters, but little earthmoving has taken place on the surface. Flattened grass partially covers the surface and visibility was poor, thus the amount of cultural material on the site is unknown. A thin layer (7-10 cm) of topsoil is present, and there may be intact subsurface features remaining, but no subplowzone midden was encountered. Site 15Bu525, much more than the other sites, had evidence of artillery impacts, especially on the southeast slope. Although an impact forms a crater that exposes a small area to subsoil, the impact buries the adjoining area with dirt and sod. The shovel probing was limited due to wet field conditions and concern about the density of ordnance.

Site 15Bu525 is considered potentially eligible for the National Register primarily because the dense ground cover prevented a thorough evaluation of its potential significance. It has not been extensively graded, a moderate amount of chippage was found under poor visibility conditions, plowzone deposits are still present, and subsurface features are likely to be preserved, if present. The site is recommended that the site area not be used for borrow

activities, unless more intensive archaeological investigations are conducted.

15Bu526

Site 15Bu526 is a multicomponent site located at an elevation of 445 feet on a slight rise on a terrace about 100 m north of the Rolling Fork River. Small drainages that flow into the Rolling Fork River lie east and west of the site. The eastern periphery of the site has been sloped downward to provide drainage along the road that lies about 50 m to the east. Cultural material was recovered from an area approximately 60 m (north-south) by 30 m in size. A Lost Lake projectile point, a Benton Stemmed or Saratoga Broad Bladed projectile point, two bifaces, a utilized flake, a tested cobble, a pitted stone, and 27 pieces of chippage were found on the site. Most of the cultural material came from the slightly to moderately eroded slope to the river, especially from a concentration of chert that included the Lost Lake point. Shovel probes indicated much of the surface had been eroded to some degree and dirt from earthmoving had been displaced onto the former surface in some portions. The site has been disturbed by impact craters to a limited extent, but little of the surface has been graded. A layer of topsoil (7-15 cm) remains, and there may be intact subsurface features, but no subplowzone midden was encountered. Visibility was poor, thus the amount of cultural material on the site is unknown. Three concentrations of material were noted.

Site 15Bu526 is considered potentially eligible for the National Register primarily because the dense ground cover and wet field conditions prevented a thorough evaluation of its significance. It has not been extensively graded, two diagnostic artifacts and a moderate amount of chippage were recovered under poor visibility conditions, plowzone deposits are still present and subsurface features are likely to be preserved, if present. The observed artifact concentrations may also contribute information about intra-site patterning, if contemporary, or local chronological development, if not contemporary, whether or not subsurface cultural features are present. It is recommended that the site area not be used for borrow activities, unless more intensive archaeological investigations are conducted.

15Bu527

Site 15Bu527 is a multicomponent site located at an elevation of 445 feet on a slight rise 150 m north of the Rolling Fork River. Small drainages to the east and west flow into the river. The site is approximately 60 m (north-south) by 30 m in size. One sherd of plain-surfaced, silt-stone-tempered pottery (Early or Middle Woodland), one Late

Archaic Karnak Stemmed projectile point; a large, crude biface and a biface or projectile point fragment, 145 pieces of chert debitage, three hammerstones, and one utilized flake were recovered. There was a heavy concentration of cultural material, which included the pottery sherd, on the southwestern side of the knoll. The site has been disturbed to a limited extent by impact craters, but little earthmoving has taken place. A thin layer of topsoil remains and there may be intact subsurface features, but no subplowzone midden was encountered. The presence of several small artifact concentrations suggests that subsurface features may have been hit by the plow during clearing activities in 1992. Visibility was poor, thus the amount of cultural material on the site is unknown.

Site 15Bu527 is considered potentially eligible for the National Register because of the high debitage density and the presence of two diagnostic artifacts, although the dense ground cover and wet field conditions prevented a thorough evaluation of the potential significance of the site. The surface has not been extensively graded, plowzone deposits are still present, and subsurface features are likely to be preserved, if present. It is recommended that the site area not be used for borrow activities, unless more intensive archaeological investigations are conducted.

VIII. CONCLUSIONS AND RECOMMENDATIONS

The Phase I survey of the proposed borrow areas resulted in the recording of four prehistoric sites, 15Bu524 through 15Bu527. Very little of the floodplain of the Rolling Fork has been surveyed in the vicinity of the project area, but the area that was examined for this project indicated that sites were numerous. The four sites were found within several hundred meters of one another, and they represent numerous short-term occupations over a wide temporal span.

Site 15Bu524 is a multicomponent site with Early Archaic, Early Woodland, and Middle to Late Woodland components. It is not eligible for the National Register due to the lack of intact deposits and the extensive disturbance from road building activities. No additional work is recommended for 15Bu524.

Site 15Bu525 was a lithic scatter of indeterminate prehistoric cultural-temporal affiliation. Flattened grass, wet field conditions, and high ordnance density obstructed the view of the surface of the site and prevented adequate assessment of the amount and distribution of cultural material present. The site is considered potentially eligible for the National Register by default as a result of conditions not conducive to thorough assessment. It is recommended that the site not be used for borrow activities

unless further archaeological investigations are conducted to adequately assess the sites its eligibility for the National Register. If the installation plans to use the site for borrow fill, it is recommended that the site be plowed and disked and a systematic surface collection made, and a series of hand-excavated units should be positioned on the basis of the surface distribution of cultural materials. Avoidance of the site is preferred, if possible, due to time constraints on accessibility of active ranges.

Site 15Bu526 is a multicomponent site with Early Archaic and Late Archaic/Early Woodland components. Flattened grass and wet field conditions obstructed the view of the surface of the site and prevented adequate assessment of the amount of cultural material present. The site is considered potentially eligible for the National Register in part as a result of conditions not conducive to thorough assessment and in part due to the presence of artifact concentrations. It is recommended that the site not be used for borrow activities unless further archaeological investigations are conducted to adequately assess its eligibility for the National Register. If the installation plans to use the site for borrow fill, it is recommended that the site be plowed and disked and a systematic surface collection made, and a series of hand-excavated units should be positioned on the basis of the surface distribution of cultural materials. Avoidance of the site is preferred, if possible, due to time constraints on accessibility of active ranges.

Site 15Bu527 is a multicomponent site with Late Archaic and Early or Middle Woodland components. Flattened grass obstructed the view of the surface of the site and prevented adequate assessment of the amount of cultural material present. The site is considered potentially eligible for the National Register because of the high debitage density, the presence of artifact concentrations, and the presence of two diagnostic artifacts. It is also considered potentially eligible because the conditions were not conducive to thorough assessment of the potential of the site. It is recommended that the site not be used for borrow activities unless further archaeological investigations are conducted to adequately assess its eligibility for the National Register. If the installation plans to use the site for borrow fill, it is recommended that the site be plowed and disked and a systematic surface collection made and a series of hand-excavated units should be positioned on the basis of the surface distribution of cultural materials. Avoidance of the site is preferred, if possible, due to time constraints on accessibility of active ranges.

It is recommended that the installation be permitted to use the area east of the road for borrow as proposed. It is recommended that the installation be permitted to borrow the area west of the road, outside the boundaries of 15Bu525 -15Bu527. This area is directly adjacent to the road, so no

impact to the sites will occur as a result of the movement of the heavy machinery to be used in the borrowing operations. The boundary of the area available to be used for borrow was marked with yellow flagging tape tied to saplings. The boundary marked creates a minimum buffer zone of 30 m around the sites. If the flagging tape has disappeared by the time borrowing operations are to be performed, the CRM staff should be contacted to reflag it. The margins of the borrow pit should be reseeded when borrowing is completed to prevent erosion of the areas that contain archaeological sites.

In the remote possibility that archaeological materials are discovered during earthmoving activities all activity in the vicinity of the finds must cease and the State Historic Preservation Officer (502-564-6661) and the DPW Cultural Resource Management Branch (502-624-6581) should be contacted, so a representative of those agencies may evaluate the materials. Also, if human remains, regardless of age or cultural affiliation, are discovered, all activity in the vicinity of the remains must cease immediately, and the state medical examiner (502-564-4545) and the appropriate local law enforcement agency (Fort Knox Law Enforcement Command, 502-624-6852) must be contacted, as stipulated in KRS 72.020.

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APPENDIX A.
RESUMES OF KEY PERSONNEL

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Date and Place of Birth: January 1, 1959; Waukesha, WI.

Present Position: J.M. Waller & Associates/Fort Knox Staff
Archeologist and Cultural Resource Manager

Education:

A.B.D. in Anthropology, Northwestern University, 1984.
M.A. in Anthropology, Northwestern University, 1982.
A.B. in Anthropology, Bryn Mawr College, 1980.

Previous Employment:

Senior Staff Archeologist, Archeology Service Center,
Department of Sociology, Anthropology, and Social Work, Mur-
ray State University, Murray, KY, November 1991-June 1993;
Staff Archeologist, November 1983-November 1991.

Southern Illinois University, Carbondale, IL: Field
Technician, November-December 1985, September-October 1984.

Illinois State Museum Society, Springfield, IL: Field
Assistant II (Supervisor), summer 1983; Field Technician,
summer 1981.

Center for American Archeology, Kampsville, IL: Field
Technician, summer 1982.

Department of Anthropology, Northwestern University,
Evanston, IL: Teaching Assistant, 1981-82 academic year.

Great Lakes Archeological Research Center, Milwaukee,
WI: Field Technician, summer 1979.

Field Research Experience:

Field experience on prehistoric and historic archeologi-
cal projects in the states of Illinois, Indiana, Kentucky,
New Jersey, South Dakota, Tennessee, and Wisconsin, 1979-
present.

Professional Publications, Reports, Papers and Manu-
scripts:

86 CRM contract reports on projects in Indiana, Kentucky,
and Tennessee.

1 Homicide site excavation contract report prepared in lieu
of court testimony in Illinois.

7 Papers presented at professional conferences.

5 Publications, 1 in press.

Doctoral candidacy qualifying paper: "A Theory of Individ-
ual Style Variation for Archeological Studies".

Manuscript submitted in partial fulfillment of the M.A.

requirements: "Models of Environmental-Cultural Relation-
ships: Testing with Archeological Evidence".

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Present Position: University of Louisville Program of
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Education:

Completed one year of doctoral program, Southern Illinois University, Carbondale, Illinois, 1972.
B.A. in Anthropology, University of Louisville, 1971.

Previous Employment:

Indiana University, Bloomington, Indiana: Staff Archaeologist, September 1991-November 1993.

Murray State University, Murray Kentucky: Staff Archaeologist, November 1991-November 1993.

Jefferson Community College, Louisville, Kentucky.
Anthropology Instructor, August 1981-December 1982.

Louisville School of Art, Louisville, Kentucky: Anthropology Instructor, January-May 1976.

University of Louisville Archaeological Survey, Louisville, Kentucky. Project Director, Field Supervisor, or Research Assistant on various projects, July 1969-January 1977.

State University of New York of Buffalo, Buffalo, New York. Senior Field Worker, June-August 1970.

Field Research Experience:

Field experience, Phase I-III, prehistoric and historic archaeological projects in the states of Illinois, Indiana, Kentucky, New York, and Tennessee, 1969-present.

Research Grants:

Six grants for fieldwork and research.

Professional Publications, Reports, Papers and Manuscripts:

3 non-contract site reports on projects
14 CRM contract reports on projects
5 Chapters in additional site reports.
4 Publications, 1 in press.

APPENDIX B.
UTM COORDINATES OF CULTURAL RESOURCES